

Appl. No. 10/069,342

Art Unit 1772

January 14, 2004

Reply to Office Action of October 14, 2003

AMENDMENTS TO THE SPECIFICATION

In the Abstract of the Disclosure:

Please amend the Abstract of the Disclosure currently of record as follows, whereby a new Abstract of the Disclosure is also attached:

A layer of a tetrafluoroethylene copolymer ~~comprising~~ having 30 to 81 % by mole of tetrafluoroethylene and 70 to 19 % by mole of at least one other monomer and having a carbonate group in a polymer chain or at a polymer chain terminal, which has a melt flow rate of 0.1 to 100 g/10 minutes (230°C, 5 kg-load) and a melting point of 90 to 230°C and a layer of a polyolefin resin are adhered with a layer of an ethylene-vinyl acetate copolymer, which satisfies the following relationship: $X \times Y/100 \geq 7.0$, wherein X is a vinyl acetate content (% by mole) and Y is a saponification degree of a methyl ester (%). The resulting laminate has high resistance to fuels, and the layer of the tetrafluoroethylene copolymer having a carbonate group and the layer of the polyolefin resin are firmly adhered.

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In The Specification:

Please replace the paragraph starting at page 1, line 6 with the following amended paragraph:

The present invention relates to a laminate comprising a fluorine-containing polymer. In particular, the present invention relates to a laminate comprising a layer of a tetrafluoroethylene copolymer having a carbonate group and a layer of a polyolefine polyolefin resin.

Please replace the paragraph starting at page 3, line 2 with the following amended paragraph:

Prior arts disclose, as an adhesive, the use of a fluorine-containing polymer to which a hydrocarbon monomer having a carboxyl group, a carboxylic anhydride group, an epoxy group or a hydrolyzable silyl group (e.g., maleic anhydride, vinyltrimethoxysilane, etc.) is grafted (e.g., JP-A-7-18035, JP-A-7-25952, JP-A-7-25954, JP-A-7-173230, JP-A-7-173446, JP-A-7-173447, etc.), or the use of a cured material of an adhesive composition containing a fluorine-containing copolymer which comprises a hydrocarbon monomer having a functional group such as hydroxyalkyl vinyl ether copolymerized with tetrafluoroethylene, chlorotrifluoroethylene, etc., and a isocyanate curing agent as an adhesive for adhering polyvinyl chloride to ETFE (ethylene-tetrafluoroethylene copolymer) which has been treated with corona discharge (e.g., JP-A-7-228848).

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Please replace the paragraph starting at page 3, line 16 with the following amended paragraph:

The adhesive or adhesive composition comprising the fluorine-containing polymer to which the functional hydrocarbon monomer is grafted or copolymerized has insufficient heat resistance. Thus, it ~~is decomposed and foamed~~ decomposes and foams so that the adhesion strength decreases, or the layers are delaminated or colored, when it is processed together with the fluororesin or used at a high temperature. The adhesive composition disclosed in JP-A-7-228848 requires the corona discharge treatment of the fluororesin.

Please replace the paragraph starting at page 4, line 11 with the following amended paragraph:

WO98/58973 (published on December 30, 1998) discloses a laminate comprising a layer of a ~~tetraluforeethylene~~ tetrafluoroethylene copolymer having a terminal carbonate group, a layer of other material such as a thermoplastic resin, and an intermediate layer between them. One example described in this WO publication is a laminate comprising an intermediate layer of an epoxy group-containing polyethylene when polyethylene is used as the other material.

Please replace the paragraph starting at page 4, line 18 with the following amended paragraph:

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When the layer of the ~~tetrafluoroethylene~~ tetrafluoroethylene copolymer having a terminal carbonate group and the polyethylene layer are adhered with the epoxy group-containing polyethylene, the initial adhesion force is high, but the adhesion force tends to decrease with time. In addition, the epoxy group-containing polyethylene itself has low resistance to fuel and is dissolved in the fuel. Thus, this laminate cannot be used to fabricate a tube or a tank for storing the fuel.

Please replace the paragraph starting at page 4, line 27 with the following amended paragraph:

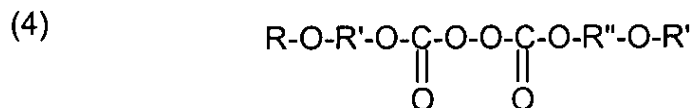
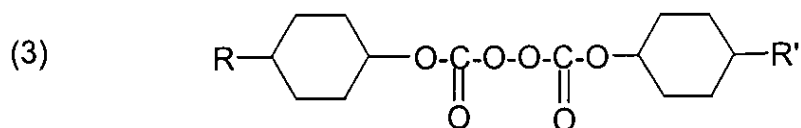
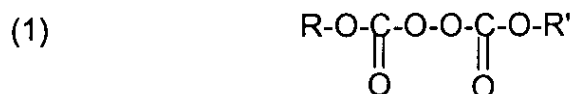
One object of the present invention is to provide a laminate which comprises a layer of a tetrafluoroethylene copolymer ~~having~~ having a carbonate group and a layer of a polyolefine resin strongly adhered to each other, the adhesion strength of which does not decrease with time, and which has high resistance to fuel.

Please replace the paragraph starting at page 8, line 18 with the following amended paragraph:

From the viewpoint of the heat resistance of the copolymer obtained, the Rf group is most preferably a ~~perfluoroalkyl~~ perfluoroalkyl group, or a ω -hydro- or ω -chloroperfluoroalkyl group.

Please replace the paragraph starting at page 9, line 10 with the following amended paragraph:

To introduce the carbonate group at the chain terminal, a peroxy carbonate is used as a polymerization initiator in the preparation of the ~~terafluoroethylene~~ tetrafluoroethylene copolymer of the present invention. Examples of the peroxy carbonate include the following compounds (1) to (4):



wherein R and R' represent independently of each other a monovalent saturated straight or branched hydrocarbon group having 1 to 15 carbon atoms or a monovalent saturated straight or branched hydrocarbon having 1 to 15 carbon atoms and an alkoxyl group at the end of the molecule,

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and R" is a divalent saturated straight or branched hydrocarbon group having 1 to 15 carbon atoms or a divalent saturated straight or branched hydrocarbon having 1 to 15 carbon atoms and an alkoxyl group at the end of the molecule.